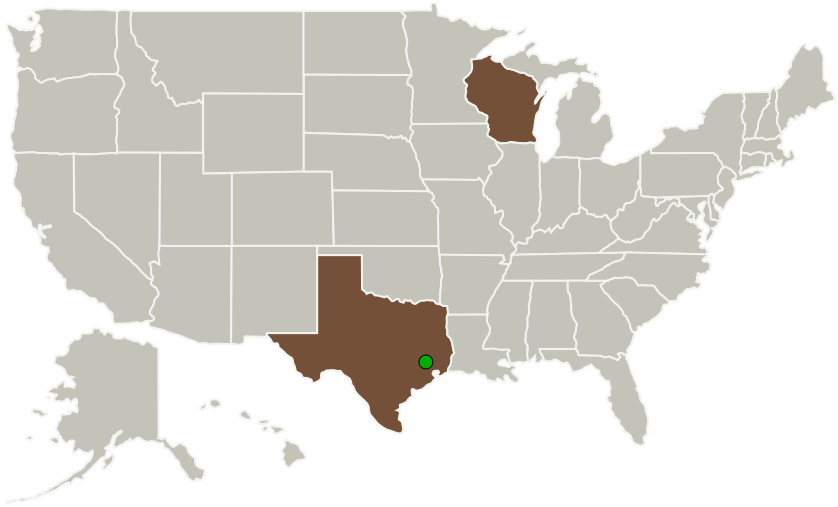
Non-Thermal Sanitation By Atmospheric Pressure Plasma, Phase II

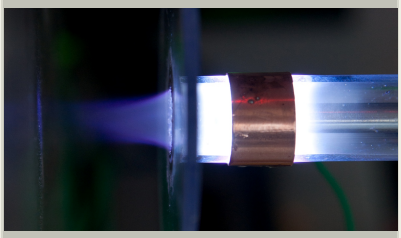
Completed Technology Project (2012 - 2015)

Project Introduction

ORBITEC's Non-Thermal Sanitation by Atmospheric Pressure Plasma technology sanitizes fresh fruits and vegetables without the use of consumable chemicals and without significantly raising the temperature of the food, so food taste and quality are not affected. Atmospheric pressure plasma is well known to be highly effective in promoting oxidation, enhancing molecular dissociation, and producing free radicals and other types of high energies. It has recently attracted much attention in the food industry due to its potential for being a non-thermal and highly effective sanitation method. The proposed technology will support surface sanitation of delivered fresh fruit and vegetables, and freshly prepared foods in a space-based habitat. It can function in reduced gravity and pressure environments, and is efficient in terms of waste and resource use. During this Phase 2 effort, designs of the primary operating components of the system will be refined and incorporated into a plasma processing chamber prototype capable of treating one to two servings of fresh food at a time. The antimicrobial performance of the prototype will be tested with a number of fruits/vegetables and different inoculums. The prototype will also be evaluated for the effect of plasma treatment on food quality.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Sierra Nevada Corporation(SNC)	Lead Organization	Industry Women-Owned Small Business (WOSB)	Sparks, Nevada
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas
Orbital Technologies Corporation	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Madison, Wisconsin

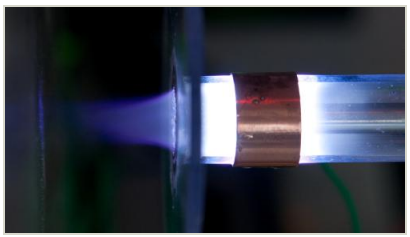
Primary U.S. Work Locations	
Texas	Wisconsin

Project Transitions

April 2012: Project Start

April 2015: Closed out

Images



Project Image
Non-Thermal Sanitation By Atmospheric Pressure Plasma
(https://techport.nasa.gov/image/127359)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Sierra Nevada Corporation (SNC)

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Ross Remiker

Co-Investigator:
Ross Remiker

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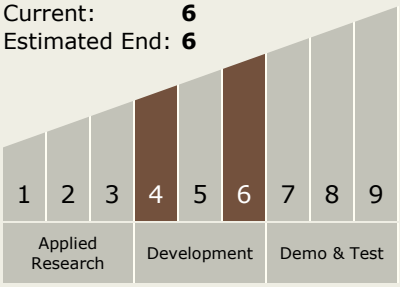
Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.5 Food Production, Processing, and Preservation

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System